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<u>L9</u>	L6 and L4	20	<u>L9</u>
<u>L8</u>	L5 and L4	10	<u>L8</u>
<u>L7</u>	714/\$.ccls.	46103	<u>L7</u>
<u>L6</u>	709/\$.ccls.	30653	<u>L6</u>
<u>L5</u>	707/\$.ccls.	22017	<u>L5</u>
<u>L4</u>	L3 and (mis\$4 same resource\$1)	41	<u>L4</u>
<u>L3</u>	L1 and quer\$3	257	<u>L3</u>
<u>L2</u>	L1 and (mis\$4 near resource\$1)	5	<u>L2</u>
<u>L1</u>	LPAR or ("logical partition")	1281	<u>L1</u>

END OF SEARCH HISTORY

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Search Results -

Terms	Documents
L1 and (mis\$4 near resource\$1)	5

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L1 and (mis\$4 near resource\$1)

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<u>L2</u>	L1 and (mis\$4 near resource\$1)	5	<u>L2</u>
<u>L1</u>	LPAR or ("logical partition")	1281	<u>L1</u>

END OF SEARCH HISTORY

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Search Results -

Terms	Documents
L6 not L5	28

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<u>L7</u>	L6 not L5	28	<u>L7</u>
<u>L6</u>	L3 and (error near log)	65	<u>L6</u>
<u>L5</u>	L4 and (error near log)	37	<u>L5</u>
<u>L4</u>	L3 and quer\$3	257	<u>L4</u>
<u>L3</u>	LPAR or ("logical partition")	1281	<u>L3</u>
<u>L2</u>	L1 and quer\$3	48	<u>L2</u>
<u>L1</u>	LPAR	483	<u>L1</u>

END OF SEARCH HISTORY

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Terms	Documents
L1 and quer\$3	48

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L12

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<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>			
<u>L12</u>	L1 and quer\$3	48	<u>L12</u>
<u>L11</u>	L9 and (mis\$4 same list)	10	<u>L11</u>
<u>L10</u>	L9 and (mis\$4 same list same tag\$4)	2	<u>L10</u>
<u>L9</u>	L1 and (quer\$3 or search\$3)	116	<u>L9</u>
<u>L8</u>	(L4 or L5) and L1	2	<u>L8</u>
<u>L7</u>	(L4 or L5) and L2	1	<u>L7</u>
<u>L6</u>	(L4 or L5) and L3	0	<u>L6</u>
<u>L5</u>	714/56.ccls.	131	<u>L5</u>
<u>L4</u>	714/48.ccls.	725	<u>L4</u>
<u>L3</u>	L2 and (updat\$3 same list\$1)	29	<u>L3</u>
<u>L2</u>	L1 and updat\$3	149	<u>L2</u>
<u>L1</u>	LPAR	483	<u>L1</u>

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<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>			
<u>L20</u>	L17 and (quer\$3 same mis\$4 same list\$1)	1	<u>L20</u>
<u>L19</u>	((logical near partition) or LPAR) same (error or mis\$4) same list\$1	5	<u>L19</u>
<u>L18</u>	((logical near partition) or LPAR) same (error or mis\$4) same (resource\$1 near list\$1)	2	<u>L18</u>
<u>L17</u>	((logical near partition) or LPAR) same (error or mis\$4)	147	<u>L17</u>
<u>L16</u>	6701464.uref.	0	<u>L16</u>
<u>L15</u>	L13 and (log same partition\$)	0	<u>L15</u>
<u>L14</u>	L13 and L1	0	<u>L14</u>
<u>L13</u>	(4914586 or 5155731 or 5557740 or 5862316).pn.	8	<u>L13</u>
<u>L12</u>	L1 and quer\$3	48	<u>L12</u>
<u>L11</u>	L9 and (mis\$4 same list)	10	<u>L11</u>
<u>L10</u>	L9 and (mis\$4 same list same tag\$4)	2	<u>L10</u>
<u>L9</u>	L1 and (quer\$3 or search\$3)	116	<u>L9</u>

L8 (L4 or L5) and L1
L7 (L4 or L5) and L2
L6 (L4 or L5) and L3
L5 714/56.ccls.
L4 714/48.ccls.
L3 L2 and (updat\$3 same list\$1)
L2 L1 and updat\$3
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Hsiu-hsen Yao;

CompEuro '91. 'Advanced Computer Technology, Reliable Systems and Applications'. 5th Annual European Computer Conference. Proceedings. , 13-1 May 1991

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lpar <or> (logical <near> partition) <and> list <and> q

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1 The dual lattice relational data model. An approach for managing compound and complex data types

Hsiu-hsen Yao;

CompEuro '91. 'Advanced Computer Technology, Reliable Systems and Applications'. 5th Annual European Computer Conference. Proceedings. , 13-1 May 1991

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result set

DB=TDBD; PLUR=YES; OP=OR

<u>L31</u>	L30 and (extract\$3 or quer\$3)	2	<u>L31</u>
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<u>L28</u>	L25 and (logical near2 volume\$1)	0	<u>L28</u>
<u>L27</u>	L25 and ((logical near2 volume\$1) or (physical near2 volumn\$1))	0	<u>L27</u>
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DB=USPT; PLUR=YES; OP=OR

<u>L24</u>	L22 and (error\$2 near log)	18	<u>L24</u>
<u>L23</u>	L22 and error\$2	224	<u>L23</u>
<u>L22</u>	L21 and resource\$2	348	<u>L22</u>
<u>L21</u>	(logical near2 volume\$1) or (physical near2 volumn\$1) and (extract\$3 or quer\$3)	774	<u>L21</u>

<u>L20</u>	L19 and resource\$2	0	<u>L20</u>
<u>L19</u>	((logical near2 volume\$1) or (physical near2 volumn\$1)) and (fail\$ or error\$2)	628	<u>L19</u>
<i>DB=TDBD; PLUR=YES; OP=OR</i>			
<u>L18</u>	L17 and (extract\$3 or quer\$3)	0	<u>L18</u>
<u>L17</u>	((logical near2 volume\$1) or (physical near2 volumn\$1)) and (fail\$ or error\$2)	13	<u>L17</u>
<u>L16</u>	L1 and (extract\$3 or quer\$3)	0	<u>L16</u>
<u>L15</u>	L13 and extract\$3	0	<u>L15</u>
<u>L14</u>	L13 and quer\$3	0	<u>L14</u>
<u>L13</u>	L12 and resource\$2	3	<u>L13</u>
<u>L12</u>	((logical near volume\$1) or (physical near volumn\$1)) and (fail\$ or error\$2)	12	<u>L12</u>
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR</i>			
<u>L11</u>	L10 and (configurat\$ near database)	30	<u>L11</u>
<u>L10</u>	L9 and resource\$2	156	<u>L10</u>
<u>L9</u>	L2 and quer\$3	156	<u>L9</u>
<u>L8</u>	L2 and (lpar same quer\$3)	1	<u>L8</u>
<u>L7</u>	L6 not L5	17	<u>L7</u>
<u>L6</u>	L2 and (quer\$3 near3 database)	30	<u>L6</u>
<u>L5</u>	L3 and (quer\$3 near5 (database or table))	17	<u>L5</u>
<u>L4</u>	L3 and quer\$3	55	<u>L4</u>
<u>L3</u>	L2 and tag\$	80	<u>L3</u>
<u>L2</u>	L1 and resource\$2	425	<u>L2</u>
<u>L1</u>	((logical near volume\$1) or (physical near volumn\$1)) and (fail\$ or error\$2)	892	<u>L1</u>

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L4: Entry 1 of 3

File: TDBD

Apr 1, 2001

TDB-ACC-NO: NNRD444202

DISCLOSURE TITLE: Methods Of Intercommunication Among Common Service Processor, Hardware System Console, And Firmware Partition Manager For Logical Partition Management, Instantiation, And Termination

PUBLICATION-DATA:

IBM technical Disclosure Bulletin, April 2001, UK

ISSUE NUMBER: 444

PAGE NUMBER: 700

PUBLICATION-DATE: April 1, 2001 (20010401)

CROSS REFERENCE: 0374-4353-0-444-700

DISCLOSURE TEXT:

Disclosed is the methods used by Common Service Processor (CSP), Hardware System Console (HSC), and System Firmware Partition Manager (PM) for the management, instantiation, and termination of logical partitions in a logical partitioned (LPAR) system. In the logically partitionable system, the HSC is responsible to manage the assignments of system resources to all available logical partitions supported by the system. These assignments are saved in several tables in NVRAM of the system. The CSP provides a communication link whereby the HSC can access NVRAM to maintain and update these tables. On the other hand, the PM acts upon requests from the HSC to instantiate logical partitions by satisfying and allocating partitions' resources assigned and indicated in these tables. The PM also reclaims resources and cleans up the partitions when they terminate and cease to run. As a result of the instantiations and terminations of partitions, the PM will directly update these same tables in NVRAM for the information related to partition state-status, processor state, etc.. Because of multiple writers to these tables, it is mandatory that these tables must be updated timely and correctly. Once the data structures of the tables are defined, the disclosed methods require that the designer of these tables to clearly identify the ownership of every field of the tables. The owner of a field can write to the field. However, all parties can read any field of the tables. Since some fields are used by the HSC and the PM at different times to perform the acknowledgment dialog, the ownership may be switched based on content of the fields. For the discussion, the entries of the processor table, I/O slot table, and partition table are shown below in their C code structures. Note that the owner (has write access to the field) is listed after the field description. Only a couple of fields can be written by multiple writers and that is shown as OWNER1/OWNER2 (i.e. HSC/PM). typedef struct { char lpar_id; /* Logical Partition ID. HSC */ char status; /* Processor Status. CSP */ char state; /* Processor State. PM */ char proc_pir; /* Processor PIR number. CSP */ char phys_loc[32]; /* Physical Location Code. CSP */ char lpar_reset_vector; /* Hypervisor reset vector. CSP */ char unused[2]; /* Reserved. CSP */ } LPAR_PROC; typedef struct { char lpar_id; /* Logical Partition ID. HSC */ char status; /* Slot status. CSP */ char state; /* Slot state. PM */ char phb_num; /* PHB number. PM */ char dev_id[4]; /* Device Id. PM */ char slot_phys_loc[7]; /* Physical Location Code. PM */ char slot_num; /* Slot number. PM */ char PCI_class[3]; /* PCI class code. PM */ char flag3; /* Reserved. CSP */ } LPAR_IO_SLOT; typedef struct { char lpar_id; /* Logical Partition ID. HSC */ char cmd_state; /* Partition command state. PM */ char cmd; /* Current command. Cleared after consumed. HSC/PM */ /* CSP writes iff cmd_state = READY or ERROR */ /*

```

Partition manager writes iff cmd_state = Booting */ char cmd_last; /* Last command
issued by HSC. CSP */ char err_code; /* Error code, valid when cmd status is set to
ERROR. HSC/PM */ /* must be cleared after ERROR state before the Partition */ /*
manager will accept any commands. */ char slot_avail; /* Slot available on this R/S
6000 model. CSP */ char lpar_slot_def; /* HSC partition definition state. HSC */
char service_auth; /* service authority - flash etc. HSC */ char lpar_name[32]; /*
Name of partition.

```

```

HSC */ int mem_size; /* Amount of memory assigned this partition in 1 MB units. HSC
*/ int page_tbl_size; /* Page table size in 1 MB units. PM */ } LPAR_CMD_STATUS;
These entries are initialized to the default values of the fields by the CSP.
Subsequently, the HSC can modify the fields belonging to the HSC to begin the
configuration of each partition(i.e. assign processor resources and I/O slot
resources to each partition). When the PM comes up, the PM will update the fields
belonging to the PM.

```

To illustrate the change of ownership, let's begin by the HSC issuing a BOOT_NORMAL command to a partition whose cmd_state field is set to READY indicating that the HSC has the ownership of the cmd field. Upon receiving the BOOT_NORMAL command from the HSC and on behalf of the HSC, the CSP writes the BOOT_NORMAL command byte to the cmd field of the structure for the partition. The PM reads and discovers a command being placed in the cmd field of the partition, then decides to instantiate the partition by changing the cmd_state from READY to BOOTING, thus causing the cmd field ownership to be switched from the HSC to the PM. The PM then clears the cmd field to acknowledge the consumption of the boot command, and sends a alert message to the CSP. The CSP detects the alert message of the change in the cmd_state field, and then informs the HSC of the completion of the BOOT_NORMAL command request. If the partition fails to boot, the err_code field is written with a failure code for the HSC to retrieve. The cmd_state field is then set to ERROR, thus switching the err_code field ownership from the PM to the HSC. The HSC can examine the error code, and try to recover from the failure. Once the HSC is ready to reboot the partition, it requests the CSP to clear the err_code field, and place the boot command into cmd field again. The PM sees the err_code being cleared and a boot command being presented, it then re-instantiates the partition by changing the cmd_state from ERROR to BOOTING.

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